REMARKS / DISCUSSION OF ISSUES

In response to the final Office action[1] mailed on 1 September 2009 ("Office action"), Applicants respectfully request reconsideration. All of the issues raised in the Office action have been carefully considered and are addressed herein.

Claims 1-20 are pending in the application.

I.   Finality of Rejection

The Examiner's attention is directed to MPEP 706.07(a) "Final Rejection, When Proper on Second Action", wherein it is stated:

> Under present practice, second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement filed during the period set forth in 37 CFR 1.97 (c)

Applicants note that the Examiner has introduced a new ground of rejection, and respectfully maintain that this new ground of rejection was not necessitated by Applicants' prior amendment to the claims, and note that an information disclosure statement has not been filed during the period set forth in 37 CFR 1.97. Therefore, in accordance with MPEP 706.07(a), the finality of this second action is inappropriate.

If Applicants' remarks below do not result in the withdrawal of the rejection of all claims, Applicants respectfully request that the finality of this rejection be withdrawn, and a non-final rejection issued.

II.   Rejection of claims 1-20 under 35 U.S.C. 103(a)

The Examiner rejects claims 1-20 under 35 U.S.C. 103(a) over Mita (USPA 2003/0222594) in view of Sun (USP 6,144,172). Applicants respectfully traverse this rejection, because the combination of Mita and Sun fails to teach or suggest providing a lamp voltage at a first high oscillating frequency during ignition of the lamp and at a second high oscillating frequency during normal operation of the lamp after its ignition, wherein at least one of the first and second oscillating frequencies is frequency modulated, as recited in each of Applicants' independent claims.

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[1] The Office action contains statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicant(s) decline to automatically subscribe to any statement or characterization in the Office action.

The Examiner acknowledges that Mita fails to teach frequency modulating the lamp voltage, and relies on Sun for this teaching. Applicants respectfully note, however, that Sun does not teach frequency modulating the oscillating frequency at which the lamp is ignited or operated, as specifically claimed by Applicants.

Sun teaches providing a lamp voltage at a low frequency, with a frequency modulated high frequency ripple:

> "In summary, the high intensity discharge lamp LMP is operated with a lower frequency rectangular wave current having the pseudo-random noise modulated higher frequency ripples superimposed thereon" (Sun, column 8, lines 28-31).

As taught by Sun, the lamp voltage is operated at the frequency of the rectangular current wave; Sun's pseudo-random noise does not alter this operating frequency, and specifically does not modulate this operating frequency, as asserted by the Examiner.

Sun's pseudo-random noise modulates the frequency of the ripple voltage; it does not modulate the frequency at which the lamp voltage is operated. In the vernacular of electronic engineering, it would be *incorrect* to state that during operation, Sun's oscillator provides a lamp voltage <u>*at the frequency of the ripple*</u>, as the language of Applicants' claims requires.

Alternatively stated, one of skill in the art would not consider superimposing a ripple voltage on a lamp voltage to be equivalent, or even similar to, frequency modulating the operating frequency of the lamp voltage. Mathematically, a frequency modulated lamp voltage, L(t) is defined in the form of:

$$L(t) = L*cos(2\pi*(f_L+x(t)*\Delta f_m)*t)$$

where L is the amplitude of the lamp voltage, f_L is the frequency being modulated, x(t) is the modulating signal, and Δf_m is the modulation index.

A lamp voltage with a superimposed frequency modulated ripple, on the other hand, is defined in the form of:

$$L(t) = A*cos(2\pi*f_L*t) + R*cos(2\pi*(f_R+x(t)*\Delta f_m)*t)$$

where R is the amplitude of the ripple voltage, and f_R is the frequency being modulated.

As is clearly evident, superimposing a frequency modulated ripple signal at frequency f_R onto a lamp voltage operating at a frequency f_L, as taught by Sun, is not equivalent to frequency modulating the lamp voltage operating at a frequency f_L, as claimed by Applicants.

Further, as taught by Applicants, frequency modulating the frequency at which the lamp voltage is oscillating diminishes the energy at the oscillating frequency, by spreading it across the modulation band, thereby reducing the RFI/EMI effects of operating at high frequency. Sun's superimposed ripple signal will have no effect on the energy at the lamp voltage frequency. Sun teaches operating the lamp at a low frequency, which avoids RFI/EMI problems, but requires a large inductor and generates heat. Applicants' invention is designed to overcome these disadvantages without introducing RFI/EMI problems, via a frequency modulation of the oscillation frequency of the lamp voltage. Sun does not address frequency modulation of the oscillation frequency of the lamp voltage, because Sun's low operating frequency avoids the RFI/EMI problems of high-frequency operating voltages.

Accordingly, because the combination of Mita and Sun fails to teach or suggest providing a lamp voltage at an oscillating frequency that is frequency modulated, Applicants respectfully maintain that the rejection of claims 1-20 under 35 U.S.C. 103(a) over Mita in view of Sun is unfounded, and should be withdrawn.

In view of the foregoing, Applicants respectfully request that the Examiner withdraw the objection(s) and/or rejection(s) of record, allow all the pending claims, and find the application to be in condition for allowance. If any points remain in issue that may best be resolved through a telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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